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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,032	10/05/2001	Monica Montano	27708/04003	2885
24024	7590	09/03/2004	EXAMINER	
CALFEE HALTER & GRISWOLD, LLP 800 SUPERIOR AVENUE SUITE 1400 CLEVELAND, OH 44114			YU, MISOOK	
			ART UNIT	PAPER NUMBER
			1642	

DATE MAILED: 09/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/972,032	<b>Applicant(s)</b> MONTANO ET AL.	
	<b>Examiner</b> MISOOK YU, Ph.D.	<b>Art Unit</b> 1642	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 and 11-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                                         |                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                             | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/26/02, 01/05/04</u> . | 6) <input checked="" type="checkbox"/> Other: <u>See Continuation Sheet</u> .           |

Continuation of Attachment(s) 6). Other: Exhibit A (seq. alignment, 2 pages).

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Group II, claims 5-10 in the reply filed on 06/14/2004 is acknowledged.

Claims 1-4, 11-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 06/14/2004.

Claims 1-22 are pending. Claims 5-10 are examined on merits.

### ***Claim Objections***

Claim 10 is objected to because of the following informalities: Claim 10 recites a non-existing claim i.e. claim 25. Appropriate correction is required.

For the purpose of this Office action, the Office will treat claim 10 to depend on claim 9 instead of claim 25. However, this treatment does not relieve applicant the burden of responding to this objection.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 9, and 10 are rejected under 35 USC 101 because the claimed invention is directed to non-statutory subject matter.

Claims 9, and 10 as written, do not sufficiently distinguish over nucleic acids, as they exist naturally because the claims do not particularly point out any non-naturally

occurring differences between the claimed products and the naturally occurring products. In the absence of the hand of man, the naturally occurring products are considered non-statutory subject matter. See *Diamond v. Chakrabarty*, 447 U.S. 303, 206 USPQ 193 (1980). The claims should be amended to indicate the hand of the inventor, e.g., by insertion of "Isolated" or "Purified". See MPEP 2105.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "under stringent conditions " in claim 5 is a relative term which renders the claim indefinite. The term " under stringent conditions " is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 5-7, 9, and 10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This written description rejection is made because the claims are interpreted as drawn to genus of nucleic acid molecules.

The applicable standard for the written description requirement can be found: MPEP 2163; *University of California v. Eli Lilly*, 43 USPQ2d 1398 at 1407; PTO Written Description Guidelines; *Enzo Biochem Inc. v. Gen-Prove Inc.*, 63 USPQ2d 1609; *Vas-Cath Inc. v. Mahurkar*, 19USPQ2d 1111; and *University of Rochester v. G.D. Searle & Co.*, 69 USPQ2d 1886 (CA FC 2004).

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof.

In this case, the only factor present in the claims 5-7 is a partial structure i.e. "at least 200 nucleotides" of SEQ ID NO:1, or a recitation of percent identity. There is not even identification of any function associated with the partial structure. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

The present claims 5-7 encompass full-length genes and cDNAs (such as differently spliced isoforms of said full-length gene) that are not further described.

There is substantial variability among the species of DNA s encompassed within the scope of the claims. They are structurally unrelated. A description of a genus of cDNA may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequences, falling within the scope of the genus or of a recitation of structural features common to the members of the genus, which features constitute a substantial portion of the genus. Since the breadth of the claims as reading on genes yet to be discovered, the lack of correlation between the structure and the function of the genes, it is concluded that the written description requirement is not satisfied.

Further, claim 7 recites "The isolated polynucleotide of claim 5, wherein the nucleic acid comprises part of an expression vector, a viral genome, or liposome." The specification teaches that instant SEQ ID NO:1 is a human cDNA. The specification does not teach a fragment of SEQ ID NO:1 is a part of viral genome. In other words, the specification does not describe how an isolated polynucleotide of the base claim comprising part of an expression vector, a viral genome, or a liposome looks like. Should claiming an expression vector or a viral vector comprising the isolated polynucleotide of the base claim, or composition comprising said viral or expression vector and liposome is desired, then the claim should be drafted accordingly.

Claim 9 recites "an ERCoA3 transcript". The specification at page 5, especially the paragraph bridging pages 5 and 6 implicitly describes that "an ERCoA3 transcript" is more than the transcript encoding SEQ ID NO:2 protein. Therefore, "an ERCoA3 transcript" is interpreted as a genus of transcripts. The specification describe only one

species i.e. SEQ ID NO:1. The dependent claim 10 also drawn to "an ERCoA3 transcript is rejected for the same reason set forth in rejecting claim 9.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed*." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of nucleic acid molecules, given that the specification has only described SEQ ID NO: 1, which encodes SEQ ID NO:2. Therefore, only isolated nucleic acid comprising SEQ ID NO: 1, which encodes SEQ ID NO:2, but not the full breadth of the claim meets the written description provision of 35 U.S.C. §112, first paragraph.

Claims 5-7, 9, and 10 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for SEQ ID NO:1, and nucleic acid encoding SEQ ID NO:2 protein, does not reasonably provide enablement for any other nucleic acid molecules. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.



The factors considered when determining if the disclosure satisfies the enablement requirement and whether any necessary experimentation is “undue” include, but are not limited to: 1) nature of the invention, 2) state of the prior art, 3) relative skill of those in the art, 4) level of predictability in the art, 5) existence of working examples, 6) breadth of claims, 7) amount of direction or guidance by the inventor, and 8) quantity of experimentation needed to make or use the invention. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

This scope of enablement rejection is made because the nature of the invention is interpreted as drawn to nucleic acid molecules encoding various proteins for claims 5-7, and primer set for amplifying an ERCoA3 transcript for claims 9, and 10.

The specification teaches that the new discovery disclosed in the instant application is a new human cDNA i.e. SEQ ID NO:1 nucleic acid encoding SEQ ID NO:2 protein. SEQ ID NO:2 interacts with an estrogen receptor (ER) and increases the ER-dependent transcription as shown in Fig. 5. The specification does not teach how to use the claimed nucleic acid that encodes a protein that is at least 85% to SEQ ID NO:2, wherein said protein does not have the disclosed activity. The specification does not teach the specific structures responsible for ER interaction or ER-dependent co-activation of transcription, nor provide guidance as to what changes in the structure can be made retaining co-activating activity.

It is well known in the art that even slight modifications in a peptide or protein structure can have significant and unpredictable effects on biological activity. Bowie et al (Science, 1990, 247:1306-1310) teach that an amino acid sequence encodes a

message that determines the shape and function of a protein and that it is the ability of these proteins to fold into unique three-dimensional structures that allows them to function and carry out biological activity and further teaches that the problem of predicting protein structure from sequence data and in turn utilizing predicted structural determinations to ascertain functional aspects of the protein is extremely complex. (col 1, p. 1306). Bowie et al further teach that while it is known that many amino acid substitutions are possible in any given protein, the position within the protein's sequence where such amino acid substitutions can be made with a reasonable expectation of maintaining function are limited. Certain positions in the sequence are critical to the three dimensional structure/function relationship and these regions can tolerate only conservative substitutions or no substitutions (col 2, p. 1306). The sensitivity of proteins to alterations of even a single amino acid (including conservative substitutions) in a sequence are exemplified by Burgess et al (J of Cell Bio. 111:2129-2138, 1990) who teach that replacement of a single lysine residue at position 118 of acidic fibroblast growth factor by glutamic acid led to the substantial loss of heparin binding, receptor binding and biological activity of the protein and by Lazar et al (Molecular and Cellular Biology, 1988, 8:1247-1252) who teach that in transforming growth factor alpha, replacement of aspartic acid at position 47 with alanine or asparagine did not affect biological activity while replacement with serine or even with conservative glutamic acid sharply reduced the biological activity of the mitogen. These references demonstrate that even a single amino acid substitution will often dramatically affect the biological activity and characteristics of a protein.

As for claims 9, and 10, the specification at the paragraph bridging pages 5, and 6 discloses "while not identical to SEQ ID NO:2 or parts thereof, are closely identical"; this implicitly teaches that "ERCoA3" is more than SEQ ID NO:2. However, the specification does not teach what other ERCoA3 transcript(s) could be amplified by the primer set from SEQ ID NO:1 and its complement. The specification provides insufficient guidance, and provides no working examples other than the transcript encoding SEQ ID NO:2. It is noted that law requires that the disclosure of an application shall inform those skilled in the art how to make the alleged discovery, not how to screen it for themselves.

Considering the unpredictable state of art, limited guidance on how to use and make the instantly claimed invention, broad breath of the claims, it is concluded that undue experimentation is required to practice the full scope of the claimed invention.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5, and 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by GenBank accession number AA687318 (24 December 1997).

The claims are interpreted as drawn to an isolated nucleic acid molecule comprising at least 200 contiguous nucleotides of SEQ ID NO:1 (claim 5), an expression vector comprising said nucleic acid molecule (claim 7), an isolated

polynucleotide comprising a complementary sequence to a portion or all of the nucleic acid sequence set forth in SEQ ID NO:1 (claim 8), and primer set comprising two primers with at least 10 nucleotides in length, wherein a first primer comprises at least two contiguous nucleotides of SEQ ID NO:1, wherein a second primer comprises at least two contiguous nucleotides of the complementary of SEQ ID NO:1, wherein the second primer is downstream of the first primer (claims 9, and 10).

GenBank accession number AA687318 teaches an isolated nucleic acid that matches 100 % to nucleotide # 741 to # 965 (total 224 nucleotides) of instant SEQ ID NO:1. Thus, GenBank accession number AA687318 meets the limitation of instant claim 5. Note the attached sequence alignment (Exhibit A).

Instant claim 7 recites “an expression vector”. The specification does not define what is being encompassed by “an expression vector”. Therefore, the Office turns to a couple of the textbooks to see what is encompassed by an expression vector in DNA recombinant technology art. Voet et al., (1991, Biochemistry, pages 837-839 only) teach that a DNA segment could be inserted into a vector, and the chimeric vector in a suitable host organism such as E. coli or yeast results in the production of large amounts of the inserted DNA segment. Likewise, Strachan et al., (1999, Human Molecular Genetics, Chapter 10.4 only, downloaded from [url.ncbi.nlm.nih.gov](http://url.ncbi.nlm.nih.gov) on 8/13/04, total pages 6) teach at page 3 of 6, 2<sup>nd</sup> paragraph in the section 10.4.2 under the heading “Exon trapping identifies expressed sequences by using an artificial RNA splicing assay” that “an expression vector” encompasses a vector designed to express RNA from DNA. GenBank accession number AA687318 teaches an isolated nucleic

acid matching 100 % to nucleotide # 741 to # 965 of instant SEQ ID NO:1 is in a vector i.e. "pT7T3D-Pac (Pharmacia) with a modified polylinker" (note bottom 1/3 of page 1 of 2 of the GenBank accession number AA687318 ). It appears that the vector (i.e. pT7T3D-Pac) used to insert the isolated nucleic acid that matches 100 % to nucleotide # 741 to # 965 (total 224 nucleotides) of instant SEQ ID NO:1 appears to have T3 and/or T7 promoter capable of expressing RNA from the inserted cDNA sequence by T7 and/or T3 polymerases. Therefore it is concluded that GenBank accession number AA687318 in pT7T3D-Pac vector meets the limitation of claim 7.

As for claim 8, the intended use "for inhibiting translation of an RNA which encodes SEQ ID NO:2" is merely suggestive of an intended use and is not given patentable weight for purposes of comparing the claim with the prior art. The claim reads on an isolated polynucleotide comprising complementary to a portion or all of the nucleic acid sequence set forth in SEQ ID NO:1 *per se*. Since GenBank accession number AA687318 teaches that the isolated sequence is double stranded, a complementary sequence is also included. GenBank accession number AA687318 teaches a nucleic acid sequence comprising complementary to a portion of the nucleic acid sequence set forth in SEQ ID NO:1.

As for claims 9, and 10, the scope of claims 9, and 10 as currently construed is broadly drawn to a primer set that could hybridize to many other cDNAs unrelated to instant SEQ ID NO:1, because the claims do not define how many contiguous nucleotides of SEQ ID NO:1 should be in the claimed primers, nor do the claims define how far apart the two primers should lie in SEQ ID NO:1. Any primer that contains two


contiguous nucleotides of SEQ ID NO:1 or its complement meets the structural limitation of the claimed primers. As for the limitation "said second contiguous sequence is downstream of said first contiguous sequence", even a single nucleotide apart from each other could be "downstream". GenBank accession number AA687318 teaches at least two primers, i.e. (1) a Not I-oligo (dT) primer, and (2) "–40m13 fwd. (forward) ET from Amersham". Amersham Pharmacia Biotech 1999 catalog page 341 teaches that "–40 M13 forward primer" (at least 10 nucleotides in length) comprises a sequence, which is identical to a first contiguous sequence "TTCCCA", (i.e. nucleotide #68 to #74 of the instant SEQ ID NO:1). The "(T)<sub>18</sub>" in the Not I-oligo (dT) primer disclosed in GenBank accession number AA687318 (note line 3 from bottom at page 1 of 2) is a complementary to the second contiguous sequence (see the poly A tail of instant SEQ ID NO:1), wherein said second contiguous sequence is downstream of said first contiguous sequence. Thus, GenBank accession number AA687318 teaches the instantly claimed primer set. The intended use "for amplifying an ERCoA3 transcript" is merely suggestive of an intended use and is not given patentable weight for purposes of comparing the claims with the prior art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MISOOK YU, Ph.D. whose telephone number is 571-272-0839. The examiner can normally be reached on 8 A.M. to 5:30 P.M., every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey C Siew can be reached on 571-272-0787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
MISOOK YU, Ph.D.  
Examiner  
Art Unit 1642





RESULT 13  
BM672504/c

LOCUS	BM672504	300 bp	mRNA	linear	EST 27-FEB-2007
DEFINITION	UI-E-CQ1-ada-e-09-0-UI.s1 UI-E-CQ1 Homo sapiens cDNA clone				
ACCESSION	UI-E-CQ1-ada-e-09-0-UI 3', mRNA sequence.				

ACCESSION	DME72504	GI:18982402
VERSION	EM672504.1	
KEYWORDS	EST.	
SOURCE	Homo sapiens	(human)
ORGANISM	Homo sapiens	

REFERENCE  
1 (bases 1 to 300)  
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi  
Mammalia; Eutheria; Primates; Catarrhini; Homidae; Homo.

JOURNAL	Genome Res. 6 (9), 791-806 (1996)
MEDLINE	87044477
PUBMED	8889548
COMMENT	Contact: Soares, MB

Coordinated Laboratory for Computational Genomics  
University of Iowa  
375 Newcom Road, 4156 MBERF, Iowa City, IA 52242, USA  
Tel: 319 335 8250  
Fax: 319 335 9565  
Email: Bento-soares@uiowa.edu  
Tissue Procurement: Dr. Gregg Hageman  
cDNA library preparation: Dr. M. Bento Soares, University of Iowa  
cDNA library Arrayed by: Dr. M. Bento Soares, University of Iowa  
DNA Sequencing by: Dr. M. Bento Soares, University of Iowa  
Clone Distribution: Researchers may obtain clones from Research  
Genetics ([www.resgen.com](http://www.resgen.com)).  
The following repetitive elements were found in this cDNA  
sequence: 1-21, >AT-rich#low-complexity (matched complement)  
Seq primer: M3 Forward  
POLYA=Yes.

FEATURES	Location/Qualifiers
source	1. .300

organism="Homo sapiens"  
 mol\_type="mRNA"  
 db\_xref="taxon:9606"  
 clone="UT-E-COI-ada-e-09-0-UT"  
 tissue\_type="optic nerve"  
 dev\_stage="adult"  
 lab\_host="DH10B (Life Technologies) (T1 phage resistant)"  
 clone\_lib="UT-E-COI"  
 name="Organ: eye; Vector: pRTT3-Pac (Pharmacia) with a  
 modified polylinker; Site 1: EcoR I; Site 2: Not I;  
 UT-E-COI is a normalized cDNA library containing the  
 following tissues/ : optic nerve. The library was  
 constructed according to Bonaldo, Lemon and Soares,  
 Genome Research, 6:791-806, 1996. First strand cDNA  
 synthesis was primed with an oligo-dT primer containing a  
 Not I site. Double stranded cDNA was ligated to an EcoR I  
 adaptor, digested with Not I, and cloned directionally  
 into pRTT3-Pac vector. The oligonucleotide used to prime  
 the synthesis of first-strand cDNA contains a library tag  
 sequence that is located between the Not I site and the  
 (dT)18 tail. The sequence tag for this library is  
 CCATTAGTGG. This library was created for the program, Gene  
 Discovery in the Visual System, supported by National Eye  
 Institute (NEI).  
 TAG\_TISSUE=human optic nerve  
 TAG\_LIB=UT-E-COI

TAG\_SEQ=CCATTAGTG"

Query Match	21.4%	Score 212;	DB 12;	Length 300;
Best Local Similarity	100.0%;	Pred. No. 0;		
Matches 212; Conservative	0;	Mismatches 0;	Indels 0;	Gaps 0

740 TTGAGTGTGCAGATGCCATCTAGGTGTGTCCACCCGATGGGAGCTGCCGGGCCGGCAGA 799

Db 233 TTGGAGTGTGCAGATGGATCTTAGGTGTGTCCACCCGATGGAGCTGGGGGCCGGCAGA 174

800 TGTGTGCCCCAGTTCACAAAGCTGATTGTGACCTGCGGGCCCTGTGTGACTTCCCTGATTCTCTGC 859

Db 173 TGTGCCCCAGTCAAAAGCTGATTGTGACCTGCGGCGCTGTGGACCTCCCTGATTCTCTGC 114

D6  
07 880 115GATCTCCAGAAAGTCTGTGCGGTGGCTTCATCACCCTCTCACTTCTCTG 54

D5  
113 TTGCATCTCCAGAAAGTCTGTGCGGTGGCTTCATCACCCTCTCACTTCTCTG 54

```

Oy - 920 CCTCAGAGTAAATTCAGAAGATCTGTGGTGCC 951
      |||||
Db   53 CCTCAGAGTAAATTCAGAAGATCTGTGGTGCC 22

```

### RESULT 13

LOCUS	462 bp	mRNA	linear	EST 28-FEB-2002
B2687366				
DEFINITION				
III-E-COI-ada-a-09-0-III				
III-E-COI				
Y1117-E-COI				
Homo sapiens cDNA clone				

ACCESSION [U15-CQ1-ada-e-09-0-UI 5'](#), mRNA sequence.  
[BM687366](#)

VERSION BM687366.1 GI:19000624  
KEYWORDS EST.

ORGANISM Homo sapiens (human)  
SOURCE  
Pulkrabova, Metazoa: Chordata: Vertebrata: Euteleostomi:

REFERENCE  
Mammalia; Eutheria; Primates; Catarrhini; Homnidae; Homo.  
1 (bases 1 to 462)

**AUTHORS** Bonaldo, M.F., Lennon, G. and Soares, M.B.  
**TITLE** Normalization and subtraction: two approaches to facilitate gene

JOURNAL  
discovery  
Genome Res. 6 (9), 791-806 (1996)  
MEDLINE  
97044477  
PUBMED  
8889548  
COMMENT  
Contact: Soares, MB

Coordinated Laboratory for Computational Genomics  
University of Iowa  
375 Newton Road, 4156 MEBRF, Iowa City, IA 52242, USA

FEATURES

Tel: 319 335 8250  
Fax: 319 335 9565  
Email: bento-soares@uiowa.edu  
Tissue Procurement: Dr. Gregg Hageman  
cDNA library preparation: Dr. M. Bento Soares, University of Iowa  
cDNA library arrayed by: Dr. M. Bento Soares, University of Iowa  
DNA Sequencing by: Dr. M. Bento Soares, University of Iowa  
Clone Distribution: Researchers may obtain clones from Research  
Genetics ([www.resegen.com](http://www.resegen.com)).  
Seq primer: M13 Reverse.  
Location/Qualifiers

```

1. .462
   /organism="Homo sapiens"
   /mol_type="mrna"
   /db_xref="taxon:9606"
   /clone="U1-E-CQ1:ada-09-0-U1"
   /tissue_type="optic nerve"
   /dev_stage="adult"
   /lab_host="BHI08 (Life Technologies) (T1 phage resistant)"
   /clone_lib="U1-E-CQ1"
   /note="Organ: eye; Vector: p773-Pac (Pharmacia) with a
modified polylinker; Site 1: EcoR I; Site 2: Not I;
U1-E-CQ1 is a normalized cDNA library containing the
following tissue(s): optic nerve. The library was
constructed according to Bonaldo, Lemon and Soares,
Genome Research, 6:791-806, 1996."

```